

**Notice of Allowability**

Application No.

09/747,538

Examiner

Suryaprabha Chunduru

Applicant(s)

KATZ ET AL.

Art Unit

1637

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 12/18/06.
2. ☒ The allowed claim(s) is/are 17,18,39,40,43 and 47.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

*Suryaprabha Chunduru*  
SURYAPRABHA CHUNDURU 3/16/07  
PRIMARY EXAMINER

Suryaprabha Chunduru  
Primary Examiner  
Art Unit: 1637

**DETAILED ACTION**

1. Applicants' response to the office action filed on 12, December 18, 2006 is acknowledged.
2. The declaration under 37 CFR 1.132 and the arguments are fully considered.

***Examiner's Amendment***

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Lisa V. Mueller on March 13, 2007.

Please amend the claims as follows:

Cancel claims 38, and 44-46.

47. A method for determining whether a deletion or insertion of at least 50 base pairs is present in DNA in a test sample comprising the steps of

a) contacting the test sample with amplification reagents wherein the amplification reagents comprise amplification primers, a probe and a polymerase, to form a reaction mixture in which one of the amplification primers hybridize with the target nucleic acid and a standard nucleic acid sequence in the test sample;

b) subjecting the reaction mixture to amplification conditions to form a target nucleic acid sequence amplification product and a standard nucleic acid amplification product, wherein the amplification conditions comprise performing the following cycle comprising the steps of:

(i) maintaining the reaction mixture for a time and at temperature above 90<sup>0</sup> C, sufficient to dissociate double stranded DNA sequences,

(ii) maintaining the reaction mixture for a time and at a temperature from 45<sup>0</sup> C to 65<sup>0</sup> C to allow the amplification primers and probe to hybridize to the DNA and thereby form primer hybrids and probe hybrids,

(iii) maintaining the reaction mixture for a time and at a temperature at least 1<sup>0</sup> C above the temperature in (ii) sufficient to dissociate the probe hybrids, if the probe is not completely complementary to the DNA,

(iv) raising the temperature of the reaction mixture to a temperature sufficient to activate the polymerase;

c) detecting a first signal that is proportional to the amount of the target nucleic acid sequence amplification product;

d) detecting a second signal that is proportional to the amount of the standard nucleic acid amplification product; and

e) comparing the first and second signal to determine whether a deletion or insertion of at least 50 base pairs is present in the DNA in the test sample.

Claim 39. The method of claim 47 wherein the deletion or insertion is of at least 200 base pairs.

Claim 40. The method of claim 47 wherein the deletion or insertion is of at least 1000 base pairs.

Claim 43. The method of claim 47 wherein the insertion or deletion is in the CYP2D6 locus.

4. The following is an examiner's statement of reasons for allowance:

Claims 17-18, 39-40, 43, and 47 are allowed.

The present invention is drawn to a method for detecting a target nucleic acid sequence suspected of having single or large deletions or insertions in a test sample comprising the steps of a) contacting the test sample with amplification reagents wherein the amplification reagents comprise amplification primers, a probe and a polymerase, to form a reaction mixture in which one of the amplification primers hybridize with the target nucleic acid and a standard nucleic acid sequence in the test sample; b) subjecting the reaction mixture to amplification conditions to form a target nucleic acid sequence amplification product and a standard nucleic acid amplification product, wherein the amplification conditions comprise performing the following cycle comprising the steps of: (i) maintaining the reaction mixture for a time and at temperature above 90<sup>0</sup> C, sufficient to dissociate double stranded DNA sequences, (ii) maintaining the reaction mixture for a time and at a temperature from 45<sup>0</sup> C to 65<sup>0</sup> C to allow the amplification primers and probe to hybridize to the DNA and thereby form primer hybrids and probe hybrids, (iii) maintaining the reaction mixture for a time and at a temperature at least 1<sup>0</sup> C above the temperature in (ii) sufficient to dissociate the probe hybrids, if the probe is not completely complementary to the DNA, (iv) raising the temperature of the reaction mixture to a temperature sufficient to activate the polymerase, repeatedly performing the cycle of step b); and detecting the amplification product as an indication of the presence or absence of the nucleic acid sequence in the test sample.

The closest prior art Steen et al. in view of Wittwer et al. teach a method for detecting a target nucleic acid sequence however, the closest prior art does not teach the four temperature

cycles required by the instant claims. Thus the instant invention was not taught or obvious over the closest prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Suryaprabha Chunduru whose telephone number is 571-272-0783. The examiner can normally be reached on 8.30A.M. - 4.30P.M, Mon - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on 571-272-0782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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